Patent claims

1. Process for the removal of sour gas from pressurised natural gas which is polluted by sulphur compounds and other sour gas compounds,
   - the natural gas, which is to be desulphurised, being initially fed into a sour gas absorption unit, in which the sulphur components and any other components are absorbed by a physically acting solution,
   - the absorbate being heated,
   - the absorbate being fed into a high-pressure flash unit, in which the sour-gas-poor absorbent and desorbed sour gas contained in the resulting mixture are separated,
   - the desorbed sour gas being cooled and the vaporised absorbent being condensed out of the sour gas stream,
   - the sour-gas-poor absorbent from the high-pressure flash unit being freed from residual sour gas in a gas stripping unit by means of stripping gas, and
   - the absorbent obtained being cooled and recycled to the sour gas absorption unit,

   characterised in that a pressure is set in the high-pressure flash unit that permits the desorbed sour gas to be condensed by means of cooling water or cooling air.

2. Process according to claim 1,
   characterised in that the laden stripping gas obtained is cooled and fed to the sour gas absorption unit.

3. Process according to either of claims 1 or 2,
   characterised in that either purified feed gas or desulphurised natural gas is used as stripping gas.

4. Process according to either of claims 2 or 3, characterised in that the stripping gas is fed to the sour gas absorption unit simultaneously with the feed gas.

5. Process according to any one of claims 1 to 4, characterised in that the absorbent contained in the desorbed sour gas is condensed and admixed to the absorbate prior to heating the absorbate.

6. Process according to any one of claims 1 to 5, characterised in that the pressure of the absorbate to be heated is set to a pressure that is higher than that in the sour gas absorption unit.

7. Process according to any one of claims 2 to 6, characterised in that the pressure of the stripping gas used is set to a pressure above that of the sour gas absorption unit and then fed into the sour gas absorption unit.

8. Process according to any one of claims 1 to 7, characterised in that

- prior to being heated, the absorbate from the sour gas absorption unit is fed to a recycle flash unit, in which a partial pressure reduction takes place, and the absorbate and desorbed gas contained in the resulting mixture are separated, and
- the desorbed gas obtained in the recycle flash unit is re-compressed and recycled to the sour gas absorption unit.

9. Process according to claim 8, characterised in that the pressure of the absorbate to be heated is set to a pressure that is higher than that in the recycle flash unit.

10. Process according to either of claims 8 or 9, characterised in that the pressure in the high-pressure flash unit is higher than that in the recycle flash unit.

11. Process according to any one of claims 8 to 10, characterised in that the laden stripping gas and the gas obtained in the recycle flash unit are combined, re-compressed and fed to the sour gas absorption unit.

12. Process according to any one of the preceding claims 1 to 12, characterised in that the high-pressure flash unit consists of a cascade of several series-connected flash vessels preceded by partial pressure reduction and re-compression of the sour gases obtained from the downstream flash vessels to the pressure of the first flash vessel of the cascade.